



the BARTizan

news of the Biosphere-Atmosphere Research & Training (BART) program

NSF-IGERT

Welcome to the June 2006 issue of the BARTizan, an occasional newsletter for BART fellows, faculty, and interested/innocent bystanders.

Director's Corner

Hello! Welcome to all, both veteran and new BARTlets! We are looking forward to seeing you soon and wish you a productive and healthy summer.

Mary Anne Carroll,
Steve Bertman, & Dave Karowe

Browse through the new **BART website** and tell us what you think. What do you like about it? What could be improved? What would be most helpful to you?
www.lsa.umich.edu/umbs/bart

BART Alum Update
Congratulations to the BART fellows who have completed their doctoral programs!!

BART Fellow	Cohort
Shelley Pressley	2000
Michael Reiskind	2000
Erika Williams	2000
Julie Adams	2001
Bill Hockaday	2001
John Ortega	2002
Mary Wolf	2002

Important Dates*:

June 10	BART Summer Immersion Experience begins
June 10-11	Orientation Workshop
June 14-16	Sugar Island retreat for 1 st -year students
June 14	Mentoring Workshop for 2 nd -year students
June 19-30	Essentials Course**
July 3	Mentoring Workshop for 1 st -year students
July 4	Independence Day!
July 6-7	Douglas Lake Summit**
July 6	Career Options Panel in evening**
July 10-14	Flux Measurement Fundamentals Course
July 17	Project Management Workshop**
July 25	Workshop on Communicating w/the Public & Media**
July 27	BART Student Research Symposium**
July 31	Ecosystem Modeling Workshop**
August 4	Proposal Writing Workshop**
August 12	Summer Immersion Experience ends

*The calendar is evolving – check with the office or the website frequently for updates.
**for 1st- and 2nd-year students

Welcome to the BART Class of 2006!
April Chiriboga, University of Arizona
Monica Madronich, University of Colorado
Kimberly Mueller, University of Michigan
Patricia Oikawa, Stony Brook University
Alan Talhelm, Michigan Technological University

BART staff:
Nancy Adair Birk
Nancy K. Heaton (Ann Arbor)
Kristin Kusmierек (on-site at UMBS, June-July 2006)

The BART office is now located at the University of Michigan.....Go Blue!! You can reach us in many ways:
Phone: (888) 647-0536 (toll-free!)
Email: bartumbs@umich.edu
Web: www.lsa.umich.edu/umbs/bart

BARTlets in the off-season...



Kolby Jardine scales a mountain ...



while Steve Edberg enjoys some winter sunshine.

Conferences Attended by BART Fellows in 2005 and 2006

Conference	Fellow(s) Attending
Ecological Society of America	A. Eller, G. Malcolm, L. Sefcik
Midwest Ecology & Evolution Conference	L. Nave
Northeast Ecology & Evolution Conference	G. Malcolm
Stable Isotopes as Tracers of Ecological Change	L. Nave
iLEAPS Science Conference	S. Edberg, A. Hogg, T. Strand
Animal Behavior	M. Wolf
Hispanic Engineering & Science Day, College of the Mainland	J. Osuna
Association for Chemoreception Sciences	M. Wolf
Society for Integrative & Comparative Biology	M. Wolf

Contribute to the **BART library!** If you present or publish a paper, thesis or dissertation, please provide an electronic AND a hard copy to the BART office. We want to add your work to our collection!

Stay connected!

Reach a fellow BARTlet or faculty mentor by email using these email groups:

- bart.igert.faculty@umich.edu
(all participating faculty)
- bart.igert.students1@umich.edu
(1st cohort, 2000)
- bart.igert.students2@umich.edu
(2nd cohort, 2001)
- bart.igert.students3@umich.edu
(3rd cohort, 2002)
- bart.igert.students4@umich.edu
(4th cohort, 2003)
- bart.igert.students5@umich.edu
(5th cohort, 2004)
- bart.igert.students6@umich.edu
(6th cohort, 2005)
- bart.igert.students7@umich.edu
(7th cohort, 2006)

Luke Nave's visit to Portugal

I am not a worldly man. Until I went to Portugal, Canada was the most exotic international location I'd ever visited. So, when I recently went to Portugal to attend the joint meeting of the Stable Isotopes in Biosphere-Atmosphere Exchange program and the Biosphere-Atmosphere Stable Isotope Network, I was very glad to travel with Chris Gough, a postdoc and fellow researcher in Peter Curtis' lab. Chris has been to Europe before, and his company made my international experience much less intimidating.

Our journey began when we left Newark, NJ, on a plane with seats apparently designed to fit some smaller-dimensioned member of humanity's ancestral line. After a grueling overnight flight, we arrived in Lisbon, capital city of the European Union's poorest nation. Chris and I then made our way through the metropolis to the train station, where we boarded a train and traveled to Tomar, a lovely Mediterranean city 150 km north of Lisbon.

Tomar is a very old city, which doesn't mean much on a continent that was stripped of its forest cover 1,000 years ago. A hilltop castle, built in 1106, dominates the skyline of the city, where the locals seem to prosper by selling trinkets to tourists and food to one another. The conference took place at the Hotel dos Templarios, a high-class place that made me feel about as far from home as possible. We had an afternoon to rest, and the conference began the next day.

The conference, titled 'Stable Isotopes as Tracers of Ecological Change,' was a busy three-day affair fueled by copious amounts of caffeine, the best friend of sleep-deprived academics the world over. Scientists from 26 countries gave Powerpoint presentations, discussed pertinent issues in the ever-developing field of stable isotope biogeochemistry, and took advantage of the intellectual buffet to get feedback on their own projects. Several presenters really amazed me with the insight they have generated into past ecological processes using stable isotopes. Claudia Mora of the University of Tennessee analyzed ^{18}O from swamp-preserved trees to construct a 400-year chronology of hurricanes in the southeast United States. Using ice cores, James White of the University of Colorado interpreted a 2000-year global atmospheric methane record so sensitive to isotopic changes that it revealed a decline in North American biomass burning when American Indians met European diseases. Theories of stable isotope fractionation and natural abundances are advancing rapidly, allowing creative researchers to reconstruct the past using stable isotopes in unheard-of ways.

Traveling to Portugal was a very educational experience. I feel better equipped to use stable isotopes as a tool in my own research after the conference, and my understanding of stable isotope research outside my area of focus has grown considerably. And, on top of becoming a better scientist, I enjoyed my first exposure to European culture. The food was fine, and the wine was better, but getting back home was best of all.



Portugal is full of oranges. Here in Tomar's castle garden, Chris Gough models one doomed to gastrointestinal distress.



An unruly American on the loose in Lisbon.

As you all know, each BART Fellow has an academic mentor and a biospheric mentor and is conducting research at the interface of the atmospheric and biospheric sciences. Here's a list of each student's research project along with mentors and institutional affiliation.

BART STUDENT RESEARCH PROJECTS		
Student, Institution, Cohort	Faculty Mentors	Research Project
Jennifer Hutton, Indiana University, 2000	A: Hans Peter Schmid B: Maxine Watson	Biogenic Emissions and Transport of Trace Gases In and Over a Northern Hardwood Ecosystem
Elisabeth Lehigh, Western Michigan University, 2000	A: Steven Bertman B: Charles Ide	Influence of Changes in Atmospheric Composition on the Growth and Development of Aquatic Organisms
Shelley Pressley, Washington State University, 2000	A: Brian Lamb, Hal Westberg B: Peter Curtis	Isoprene Flux Measurements Above a Northern Hardwood Forest
Michael Reiskind, University of Michigan, 2000	A: Peter Sousounis B: Mark Wilson	The Effects of Global Climate Change and a High CO ₂ Atmosphere on Mosquito Larvae
Erika Williams University of Michigan, 2000	A: Gerald Keeler B: Lynn Walter, Jim Teeri	Linking the Biogeochemical Cycles of Carbon and Toxic Trace Metals: A Landscape-Level Investigation of Pb and Hg within Soils & Surface Waters
Julie Adams, Bowling Green State University, 2001	A: Valerie Young B: Paul Moore	Effects of High CO ₂ Detritus on Growth Rates and Food of Benthic Stream Crustaceans
Rick Carter, Bowling Green State University, 2001	A: Steven Bertman B: Rex Lowe	Changes in the Near-shore Littoral of Northeastern Lake Michigan
William Hockaday, Ohio State University, 2001	A: Ellen Mosley-Thompson B: Peter Curtis	Partitioning Respiratory CO ₂ Fluxes Within a Northern Hardwood Forest
Lesley Sefcik, University of Michigan, 2001	A: Mary Anne Carroll B: Dave Ellsworth	Effects of Elevated CO ₂ and Shade on Growth and Physiology in Five Northern Tree Species
Julie Heinlein, Michigan State University, 2002	A: Steven Bertman B: R. Jan Stevenson	Ozone-Induced Changes to Algal Communities
Alan J. Hogg, University of Michigan, 2002	A: Mary Anne Carroll B: Dave Ellsworth	NO _x , NO _y , Ozone, and Isoprene Flux Measurements at the UMBS
Amanda Louise Lockwood, Purdue University, 2002	A: Paul Shepson B: David Rhodes	The Role of Biogenic Volatile Organic Compounds' Emission in Forest Nitrogen Cycling
Glenna Malcolm, Penn State University, 2002	A: Kenneth Davis B: Roger Koide	Water Acquisition Strategies & Effects of Climatic Variability on Carbon Sequestration in Northern Michigan Trees
John Ortega, University of Colorado, 2002	A: Detlev Helmig B: Alex Guenther	Flux Measurements of Biogenic Volatile Organic Compounds by Disjunct Eddy Sampling and Ion Trap Mass Spectrometry Analysis at the UMBS
Tara Strand, Washington State University, 2002	A: Brian Lamb, Hal Westberg B: Steve Seybold	Biosphere/Atmosphere Interactions: Pheromone Fate and Insect Response in Forest Canopies
Mary Wolf, Bowling Green State University, 2002	A: Steven Bertman B: Paul Moore	The Effect of Elevated Ozone on Microbial and Benthic Invertebrate Colonization and Survival
Joseph Bump, Michigan Technological University, 2003	A: Richard Honrath B: Rolf Peterson	Animal as Monitors of Changes in Atmospheric Carbon Isotopes
Amy Canavan, University of Minnesota, 2003	A: Dan Vimont B: Francesca Cuthbert	Prediction of the Effects of Climate Change on Great Lakes Avian Populations
Allyson Eller, Cornell University, 2003	A: Mary Anne Carroll B: Jed Sparks	Ramifications of Varying Atmospheric Concentrations of reactive-odd Nitrogen (NO _x) and Direct Foliar Uptake of Atmospheric Nitrogen
Doug Martins, Purdue University, 2003	A: Tilden Myers B: Paul Shepson	The Development of a Light Aircraft Flux Measurement System for Determination of CO ₂ and Other Trace Gas Fluxes
Krista McGuire, University of Michigan, 2003	A: Mary Anne Carroll B: Don Zak, John Vandermeer	Dynamics of Arbuscular Mycorrhizal Fungi in Response to Wet Nitrogen Deposition and Elevated Atmospheric N in Ace Saccharum Marsh

BART STUDENT RESEARCH PROJECTS, continued

Student, Institution, Cohort	Faculty Mentors	Research Project
Lucas J. Neil, University of Michigan, 2003	A: Mary Anne Carroll B: Dave Ellsworth	Ozone and Isoprene Fluxes—Measurements at the UMBS
Dale Trexel, University of Minnesota, 2003	A. Ed. Swain B. Francesca Cuthbert	Hg Transport from Mother to Egg in Migratory Waterbirds: Does Hg in Eggs Represent Exposure on Breeding or Wintering Grounds?
Anna Williams, University of Michigan, 2003	A: Mary Anne Carroll B: Milford Wolpoff	$\delta^{18}\text{O}$ Use as a Dietary Indicator
Jessica Cruz de Osuna, University of California-Berkeley, 2004	A. Inez Fung B. Dennis Baldocchi, Todd Dawson	Effects of Ambient CO_2 and Climate on Mesophyll Conductance
Tiffany Duhl, University of Colorado, 2004	A. Detlev Helmig B. David Karowe	Biogenic Uptake of Volatile Organic Compounds by Plants
Lucas Fabian, University of Michigan, 2004	A. Nilton Renno B. David Ellsworth	The Role of Coherent Convective Plumes and Vortices on Biosphere-Atmosphere Interactions
Lucas Nave, Ohio State University, 2004	A. Paul Shepson B. Peter Curtis	Partitioning of Atmospheric Nitrogen Deposition Within Forest Ecosystems
Heidi Ochsner, Michigan Technological University, 2004	A. Judith Perlinger B. Ann Maclean	Atmosphere Biosphere Interactions of Persistent Bioaccumulative Toxins in the Superior Airshed.
Brandy Skjold, Western Michigan University, 2004	A. Steven Bertman B. Silvia Roszbach	Changes in Inositol Concentration, Microbial Communities and Denitrification Rates in Soils under alfalfa (<i>Medicago Sativa</i>) Exposed to Elevated and Ambient CO_2 Levels
Megan Swan, Ohio University, 2004	A. Valerie Young B. Kim Brown	Investigating the Link Between Climate and Physiological Factors in <i>Populus Grandidentata</i> Michx
Amy Young, Western Michigan University, 2004	A. Steven Bertman B. David Karowe	Effects of Elevated Atmospheric Carbon Dioxide and Ozone on Plant Phytoestrogens: Implications for Plant Interactions with Herbivores, Pathogens, and Mutualists.
Steven Edburg, Washington State University, 2005	A. Brian Lamb, Hal Westberg B. Jed Sparks, David Stock	Atmospheric Chemistry Forest Canopy Model: A Large Eddy Simulation Approach
John Hassett, University of Michigan, 2005	A. Jerry Keeler B. Don Zak	Does Chronic Atmospheric NO_3 Deposition Decrease the Abundance of Lignin-Degrading Fungi in Soil?
Deborah Hudleston, University of Michigan, 2005	A. Mary Anne Carroll B. Don Zak, Knute Nadelhoffer	Effects of Elevated Atmospheric Carbon Dioxide and Tropospheric Ozone on Nitrogen Cycling in a Northern Hardwood Forest are Mediated by Mycorrhizae.
Kolby Jardine, Stony Brook University, 2005	A. John Mak B. Alex Guenther, Manuel Lerdau	$\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ Isotope Ratio Measurements of Abundant Oxygenates in the Atmosphere
April Chiriboga, University of Arizona, 2006	A. Malcolm Hughes, Xubin Zeng B. Alfredo Huete	From the Ground Up: Integrating Carbon Monitoring Approaches for a Northern Hardwood Forest
Monica Madronich, University of Colorado, 2006	A: Alex Guenther B: Carol Wessman	The Role of Landscape Structure on Biosphere-Atmosphere Interactions: Enhancing the Knowledge of Regional BVOC's Emissions
Kimberly Mueller, University of Michigan, 2006	A: Anna Michalak B: Peter Curtis	Evaluation of Process-Based Carbon Flux Drivers through Geo-Statistical Methods
Patricia Oikawa, Stony Brook University, 2006	A: John Mak B: Manuel Lerdau	An Investigation of Mechanisms Regulating Biogenic Methanol Emissions
Alan Talhelm, Michigan Technological University, 2006	A: Richard Honrath B: Kurt Pregitzer	Carbon Assimilation and Gas Exchange under Long-Term Simulated Nitrogen Deposition and Episodic Ozone